We claim:

1. An integrated real-time product information system (30) for use where a plurality of products can be disposed on shelves (46), said shelves (46) capable of forming a plurality of gondolas (44), and an on-site processor (32) is utilized to at least audit said products utilizing a space plan (239) for said shelves (46), said information system (30) comprising:

a plurality of display modules (52) for displaying desired product information, said modules (52) disposed at desired locations of said shelves (46);

at least one gondola controller (48) operatively connected to at least one said module (52);

means (48c) for communicating real time information between said on-site processor (32) and said at least one gondola controller (48);

at least one information controller (42) for controlling display of real time information at said shelves (46) via said gondola controller (48) and said display module (52); and

printer enabling means (227) for on demand creation and display of at least one printed artifice (220) that can be placed at a predetermined location of said shelves (46).

2.The product information system (30) of claim 1 further comprising means (41) for operatively connecting said system to at least one wide area network (43).

3. The product information system (30) of claim 1 wherein said gondola controller (48) comprises a microprocessor (48a), and a communications networking apparatus (48c) for operatively connecting, via at least one data receiver/transmitter apparatus (48e)

capable of operating either asynchronously or synchronously.

4. The product information system (30) of claim 3, further comprising power supply means (49) for supplying power to said gondola controller (48) and said modules (52), said power supply means (49) comprising an uninterruptable power source (UPS).

5. The product information system (30) of claim 4 wherein said gondola controller (48) further comprises video transceiver means (48d) for providing ~~receiving~~ video signals and ~~transmitting said signals~~ to at least one said module (52).

6. The product information system (30) of claim 4, wherein said UPS (49) comprises a battery ~~means~~ (49b) for supplying backup power to said gondola controller (48) and said modules (52).

7. The product information system (30) of claim 4, wherein gondola controller means (48) further comprises power level sensing and control means (47).

8. The product information system (30) of claim 3 wherein said communications networking apparatus (48c) comprises one of a wireless network.

9. The product information system (30) of claim 3 wherein said communications network (48c) is hardwired.

10. The product information system (30) of claim 1 wherein said gondola controller (48) comprises a two way serial bus (48b), said bus (48b) at least

operatively connecting said gondola controller (48) and said at least one module (52).

11. The product information system (30) of claim 10 wherein said bus (48b) comprises a plurality of data lines (142-144).

12. The product information system (30) of claim 1 wherein at least one said module (52) comprises:

a microcontroller (182);

means for visually displaying information (137);

a differential receiver (184) for operatively connecting said means for visual display (137) with said microcontroller (182);

means for receiving power (138);

means (82) for operatively connecting said module (52) to a communications bus (48b); and

means (182) for self-testing.

13. The product information system (30) of claim 12, wherein at least one said module (52) further comprises temperature sensing means (191) for determining ambient temperature in the vicinity of said module (52).

14. The product information system (30) of claim 12, wherein said visual display means (137) comprises a video receiver.

15. The product information system (30) of claim 12, wherein said differential receiver (184) comprises a CMOS convertor.

16. The product information system (30) of claim 1, further comprising a graphic edge creation means (227) for custom creating said printed artifice.

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17. The product information system (30) of claim 16, wherein said graphic edge creation means (227) receives information from said on site processor (32) and enables printing labels (220) of any desired size.

18. The product information system (30) of claim 17, where said labels (220) comprise plan-o-grams.

19. The product information system (30) of claim 1, where said artifice (220) comprises a plan-o-gram.

20. The product information system (30) of claim ~~1~~ 16, where said printer enabling means (227) is capable of graphics. A17

21. The product information system (30) of claim 1 where said printer enabling means (227) is capable of enabling color printing.

22. The product information system (30) of claim 17, wherein said graphic edge creation system (227) further comprises a label library database (237), a print formatter (240), means for printing (222), a label editor (236), and a print sequencer (238).

23. The product information system (30) of claim 22, wherein said label editor (236) ~~further~~ comprises at least one label template (246).

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24. The product information system (30) of claim 1, further comprising a portable RF (54) device for transceiving data with said on-site processor (32) for subsequent communication to said at least one gondola controller (48).

25. The product information system (30) of claim 1, further comprising a portable UPC scanner (54a).

26. The product information system (30) of claim 24, wherein said portable RF device (54) further comprises a portable UPC scanner (54a).

27. The product information system (30) of claim 1, wherein said printed artifice comprises a store shelf edge label (224) that is sized according to the corresponding amount of shelf space a selected product occupies.

28. A product information display assembly (52) securable to a product support (70) having a tag molding (68) and enabled for connection to a source (32) of product information, said assembly comprising:

a connector (80) formed to be removably securable in said tag molding (68) with at least one pair of resilient legs (94, 98) extending outwardly from said tag molding (68);

an interconnector (84) including first and second pairs (117, 125) of hooked arms, said first pair of arms (117) formed to interfit with said pair of resilient legs (94, 98) of said connector (80);

a back plane (82) including a pair of extending arms (132, 134) formed to interfit a second pair (108, 114) of hooked arms of said interconnector (84), a channel (145) formed opposite said extending arms (134), said channel (145) having first (136a) and second (136b) longitudinal lips formed on either side thereof;

at least one electrical bus (50) carried in said channel (145);

a module housing (180) comprising a pair of mating lips (186a, 186b) to mate with said first (136a) and second (136b) longitudinal lips;

a microcontroller (182), and a means for visual display (137) of said product information, said display means (137) and microcontroller (182) disposed within said module housing (180) and enabled to be in communication with said bus (50) and each other;

means (176) for operatively connecting said module to said electrical bus (50); and

means (86) for covering said module housing, said means formed to mate with said interconnector (84).

29. The product information display assembly (52) as set forth by claim 28, wherein said connector (80), interconnector (84), back plane (82), said module housing (180) and said means for covering (86) said module (52) are formed of plastic.

30. The product information display assembly (52) of claim 28, wherein said back plane (82) comprises plastic and said bus (50) is formed with said back plane (82).

31. The product information display assembly (52) of claim 28 wherein said bus (50) is coextruded with said back plane.

32. The product information display assembly (52) of claim 28, wherein said bus (50) comprises metallized tape having at least two (138, 140) discrete electrical conductors formed thereon.

33. The product information display assembly (52) of claim 28 wherein said information display (137) comprises one of an LED and LCD apparatus.

34. The product information display assembly (52) of claim 28 wherein said information display comprises a LED apparatus.

35. The product information display assembly (52) of claim 28 wherein said information display comprises a FED apparatus.

36. The product information display assembly (52) of claim 28 wherein said information display comprises at least one alphanumeric character and at least one decimal.

37. The product information display assembly (52) of claim 28, wherein said assembly is enabled to cooperate with an external video apparatus (48d).

38. The product information display assembly (52) of claim 28, wherein said assembly is formed so as to be user adjustable relative to a planar axis of said tag molding (68).

39. The product information assembly (52) of claim 28, wherein said back plane (82) is formed to be capable of carrying a label within said channel.

40. A method for registering a product display module (52) with a product information system (30) such that said module displays desired real time product information at a particular shelf location where a plurality of products can be disposed on shelves (46), said method comprising the steps:

providing a database (37) of product information indexed by UPC;

providing an information controller (42);

providing an interface (30) for said database and said information controller;

providing at least one display module (52);

disposing said display module (52) at said desired location of said shelf (46);

providing an interface (48) between said information controller (42) and said display module (52);

providing a communications path (48c, 48b) between said database (37), said information controller (42), and said module (52);

transmitting, over said communications path (48c, 48b), control data from said information controller (42) to register said module (52) in said product information system (30);

transmitting, over said communications path (48c, 48b) real time product information to said information controller (42) from said product database (37);

transmitting, over said communications path (48c, 48b), said real time product information to said display module (52) from said information controller (42), and

displaying said product information on said module (52).

41. A method for registering a plurality of product display modules (52) with a product information system (30) such that each said module (52) displays real time product information at a particular shelf (46) location ~~where a plurality of products can be disposed on any of a plurality of shelves~~ said shelves comprising gondolas (44), said method comprising the steps:

providing a database (37) of product information indexed by UPC;

providing an information controller (42);

providing at least one gondola controller (48);

interfacing said database (37), and said information controller (42);

interfacing said information controller (42) and said at least one gondola controller (48);

providing at least one display module (52);

disposing each said display module (52) at a desired location of said shelves (46);

operatively connecting ~~interfacing~~ said gondola controller (48) and each said display module (52);

providing a communications path (48B, 48C) between said database, said information controller (42), said gondola controller (48), and said module (52);

transmitting, over said communications path (48b, 48c), control data from said information controller (42) to register said gondola controller (48) with said product information system (30);

transmitting, over said communications path (48b, 48c), control data from said gondola controller (48) to register said module (52) with said gondola controller 48);

transmitting, over said communications path (48b, 48c), module registration information from said gondola controller (48) to said information controller (42);

transmitting, over said communications (48b, 48c) path
real time product information to said gondola controller (48) from said product database (34);

transmitting, over said communications path (48b, 48c), said real time product information to said display module (52) from said gondola controller (48), and

displaying said product information on said module (52).

42. A method for remotely registering a product display module (52) with a product information system (30) having an on-site processor (32) such that said module (52) displays desired real time product information at a particular shelf location (46) where a plurality of UPC coded products can be disposed on shelves (46), said method comprising the steps:

providing a database of product information indexed by UPC (37);

providing an information controller (42);

interfacing said database (37) and said information controller (42);

providing a display module (52) having an onboard microcontroller (182) addressable alphanumeric display (137);

disposing said display module (52) at said particular location of said shelf;

interfacing said information controller (42) and said display module (52);

providing a communications path between said database (48b, 48c), said information controller (42), and said module (52);

transmitting, over said communications path (48b, 48c), control data from said information controller (42) to register said module (52) in said product information system (30);

scanning, via a handheld RF device (53), a UPC code associated with a product;

radio frequency transmitting the scanned UPC data from said RF device (54) to said on-site processor (32);

storing said data at said database (37) via said information controller (42);

transmitting, over said communications path (48b, 48c), said real time product information to said

display module (52) from said information controller (42), and

displaying said product information on said module (52) via said alphanumeric display (137).

43. A method for remotely registering a plurality of product display modules (52) with a product information system (30) such that each said module (52) displays desired real time product information at a particular shelf location where a plurality of products having UPC codes can be disposed on any of a plurality of shelves (46) carrying corresponding UPC codes, said plurality of shelves (46) comprising gondolas (44), said method comprising the steps:

providing a database of product information indexed by UPC (37);

providing an information controller (42);

providing at least one gondola controller (48);

providing an interface (30) for said information controller (42) and said at least one gondola controller (48);

providing at least one display module (52);

disposing each said display module (52) at a desired location of said shelves (46);

providing a first communications path (48b) between said gondola controller (48) and each said display module (52);

providing a second communications path (48c) between said database, said information controller, said gondola controller;

transmitting, over said communications path, control data from said information controller (42) to register said gondola controller (48) with said product information system (30);

scanning, via a handheld RF device (54), a UPC code from either a UPC coded product, or a UPC code from a shelf (46);

transmitting the scanned UPC data to said information controller (42);

transmitting, over said first communications path (48b), control data from said gondola controller to register said module (52) with said gondola controller (48);

transmitting, over said second communications path (48c), module registration information from said gondola controller (48) to said information controller (42);

transmitting, over said second communications path (48c) real time product information to said gondola controller (48) from said product database (34);

transmitting, over said first communications path (48b), said real time product information to said display module (52) from said gondola controller (48), and

displaying said product information on said module (52).

44. The method of claim 43 wherein said hand held RF device (54) further comprises manual means (54b) for inputting data.

45. The method of claim 44, wherein instead of scanning said UPC data, the UPC code is manually input via said manual means (54b) for inputting data.

46. A method for remotely registering a plurality of product display modules (52) with a product information system (30) such that each said module (52) displays desired real time product information at a particular shelf location where a plurality of

products having UPC codes can be disposed on any of a plurality of shelves (46) carrying corresponding UPC codes, said plurality of shelves comprising gondolas (44), said method comprising the steps:

providing a database (37) of product information indexed by UPC;

providing printed labels (220) comprising UPC codes;

providing an information controller (42);

providing at least one gondola controller (48);

providing at least one display module (52) having an onboard microcontroller (182) addressable alphanumeric display (137);

disposing each said display module (52) at a particular location of said shelves (46);

providing a first communications path (48b) between said gondola controller (48) and each said display module (52);

providing a second communications path (48c) between said database (34), said information controller (42), said gondola controller (48), and said module (52);

transmitting, over said second communications path (48c), control data from said information controller (42) to register said gondola controller (48) with said product information system (30);

disposing at least one said printed label (220) at a desired shelf location;

scanning, via a handheld RF device (54), a UPC code from either a UPC coded product, or a UPC code from said disposed label at said desired shelf;

transmitting the scanned UPC data to said information controller (42);

transmitting, over said first communications path (48b), control data from said gondola controller (48)

to register said module (52) with said gondola controller (48);

transmitting, over said second communications path (48c), module registration information from said gondola controller (48) to said information controller (42);

transmitting, over said second communications path (48c), real time product information to said gondola controller (48) from said product database (34) via said information controller (42);

transmitting, over said first communications path (48b), said real time product information to said display module (52) from said gondola controller (48), and

displaying said product information on said module (52).

47. The product information assembly (52) of claim 34, wherein said LED apparatus comprises a plurality of multiplexed LED's.

48. The product information system (30) of claim 1 wherein said module (52) further comprises associated display means for displaying desired product sale or pricing information at selected times.

49. The product information assembly (52) of claim 28, wherein said module (48) further comprises associated display means for displaying desired product sale or pricing information at selected times.

50. The product display assembly (52) of claim ~~49~~ 28, further comprising an associated module housing (5200) comprising means (1186a, 1186b) for mating said associated module housing (5200) with said backplane (82), said associated module housing (5200)

comprising associated display means (1780) for displaying desired associated product information.

51. The information display assembly (52) of claim 28, wherein said display comprises at least one seven-segment digit, at least one two segment digit, at least one decimal point, at least one dollar sign, at least one cent sign, at least one FOR icon, at least one PER icon, at least one alphanumeric character and at least one enumerator.

52. A method for activating a product display module (52) associated with a product information system (30) such that said module displays real time product information at a particular shelf location where a plurality of products can be disposed on shelves (46) and a printed label (224) is generated corresponding in shelf length to the amount of space a particular product occupies on a shelf, said label (224) comprising any product information and capable of placement at a predetermined location, said method comprising the steps:

providing a database (37) of product information indexed by UPC;

providing an information controller (42) ;

providing a display module (52) having an onboard microcontroller (182) addressable alphanumeric display;

disposing said display module (52) at said particular location of said shelf (46);

providing a communications path (48b, 48c) between said database (37), said information controller (42), and said module(52);

transmitting, over said communications path (48b, 48c), control data from said information controller

(42) to register said module (52) in said product information system (30);

transmitting over said communications path (48b, 48c) real time product information to said information controller (42) from said product database (34);

transmitting, over said communications path (48b, 48c), said real time product information to said display module (52) from said information controller (42),

displaying said product information on said module (52);

determining the amount of shelf space a selected product to be displayed occupies on a store shelf (46);

sizing a label (224) for shelf placement corresponding to the determined shelf space; and

printing a label (224) having product information regarding said selected product, said label (220) corresponding to said determined label size.

53. The product information system (30) of claim 12 wherein said visual display (137) means ~~comprises a~~ LCD apparatus.

54. The product information system (30) of claim 12 wherein said visual display (137) means comprises a LED apparatus.

55. The product information system (30) of claim 12 wherein said visual display means (137) comprises a FED apparatus.

56. The product information system (30) of claim 17, wherein said printed artifice (224) comprises a store shelf edge label (224) that is sized according to the

corresponding amount of shelf space a selected product occupies.

57. The product information system (30) of claim 22, wherein said printed artifice comprises a store shelf edge label (224) that is sized according to the corresponding amount of shelf space a selected product occupies.

58. The product information display assembly (52) of claim 28 wherein said means (86) for covering said assembly comprises at least one channel (119, 123) having at least one channel lip (121, 122) means for carrying a desired label therewithin.

59. The product information display assembly (52) of claim 28 further comprising module interconnect means (161) for interconnecting a plurality of said product display assemblies (52) via said electrical bus (50).

60. The product information display assembly (52) of claim 59 wherein said module interconnect means (161) comprises:

first and second pairs (163, 165) (167, 169) of side walls defining a rectilinear connector housing (175), said housing forming an aperture cavity (179) therewithin parallel within said first pair of sidewalls (167, 169), said aperture formed to carry a plurality of parallel electrical conductors;

a plurality of substantially parallel electrical contacts (173) formed with an outside face (177) of one of said first pair of sidewalls (167, 169) and opposite said aperture cavity (179), said electrical contacts (173) having tines (171) extending partially into said aperture cavity (179);

first (181) and second (183) channel mating lips formed with a respective first pair of sidewalls (163, 165) of said housing; and

aperture cover means (185) for urging said conductors against said electrical contact tines (171).

61. The product information display assembly (52) of claim 60 wherein said module interconnect means (161) is comprised of plastic.

62. The product information display assembly (52) of claim 37 wherein said associated display means (5200) comprises means for video display (48d) of product information.

63. The product display assembly (52) of claim 50, wherein said associated display means (5200) comprises at least one LED.

64. The product information display assembly of claim 60, wherein said aperture cover means (185) comprises contact urging fingers (187).

65. The product information system (30) of claim 16, wherein said graphic edge creation means (227) comprises:

a space plan database (228);

a store plan (242) and space plan (244); and

a store spacemap (233.

66. The product information assembly (52) of claim 4, wherein said power supply means 49 dynamically senses level of said power whereby said gondola controller (48) dynamically manages power.

67. A method for activating a product display module (52) associated with a product information system (30) such that said module displays desired real time product information at a particular shelf location where a plurality of products can be disposed on said shelves (46) forming at least one gondola (44) and wherein a printed label (224) is remotely generated corresponding in shelf length to the amount of space a particular product occupies on a shelf (46), said label (224) comprising any desired product information and capable of placement at a desired location, said method comprising the steps:

providing a database (37) of product information indexed by UPC;

providing an information controller (42);

providing a gondola controller (48);

providing a display module (52) having an onboard microcontroller (182) addressable alphanumeric display (137);

disposing said display module (52) at said desired location of said shelf (46);

providing a communications path (48b, 48c) between said database (37), said information controller (42), and said gondola controller (48);

transmitting, over said communications path (48c), control data from said information controller (42) to register said gondola controller (48) in said product information system (30);

transmitting, over said communications path (48c) real time product information to said gondola controller (48) from said product database (37);

transmitting, over another communications path (48b), said real time product information to said display module (52) from said gondola controller (48),

displaying said product information on said module (52);

remotely determining the amount of shelf space a selected product to be displayed occupies on a store shelf (46);

remotely sizing a label (224) for shelf placement corresponding to the determined shelf space; and

remotely printing a label (224) having product information regarding said selected product, said label (224) corresponding to said determined label size.

68. An integrated real-time product information system (30) for use where a plurality of products can be disposed on shelves (46), said shelves (46) capable of forming a plurality of gondolas (44), and an on-site processor (32) is utilized to at least audit said products utilizing a space plan (239) for said shelves (46), said information system (30) comprising:

a graphic edge creation means (227) for custom creating a printed artifice (220) of any desired size for placement at a desired location of at least one said gondola (44);

at least one information controller (42) for controlling and communicating product information from said on-site processor (32) to said graphic edge creation system;

said graphic edge creation means (227) further comprising:

a label library database (237), a print formatter (240), a label editor (236), and a print sequencer (238),

a space plan database (228), a store plan (242), a space plan (244); and

a store spacemap (233 whereby said graphic edge creation means (227) receives said product information from said information controller (42) and

correspondingly enables printing said desired printed artifice (220).

69. The product information system (30) of claim 68, further comprising means for printing (222) said printed artifice (220), and wherein said label editor (236) further comprises at least one label template (246).

70. The product information system (30) of claim 69, wherein said means for printing (222) is capable of printing in colors.

71. The product information system (30) of claim 68, wherein said printed artifice (220) comprises a print strip (224).